

REMARKS

Claims 1-16 and 19-23 are pending in the application.

Withdrawal of Claim Rejections Under 35 U.S.C. §103

At page 2 of the outstanding Office action, the Office indicates that the rejection of claims 1-16 and 19-23 as obvious in view of the disclosure in U.S. Patent No. 6,936,727 to Sutton et al. (Sutton et al.) has been withdrawn in view of applicants' arguments submitted December 12, 2008. Based on the April 15, 2009 telephone conference with Examiner Margaret Seaman, it is the understanding of the undersigned attorney that this rejection of claims 1-16 and 19-23 has been withdrawn in accordance with 35 U.S.C. §103(c) since U.S. Patent No. 6,936,727 could only be available as prior art against the subject application under 35 U.S.C. §102(e) and the subject application and U.S. Patent No. 6,936,727 are commonly assigned. The applicability of 35 U.S.C. §103(c) to U.S. Patent No. 6,936,727 B2 (issued August 30, 2005) and the publication of the underlying U.S. application as US 2004/0199026 A1 (published October 7, 2004) was noted in applicants' remarks submitted December 12, 2008.

Applicants' remarks submitted December 12, 2008 also pointed out International Publication No. WO 03/006446, corresponding to U.S. Patent No. 6,936,727 B2, which published January 23, 2003, and noted applicants' assumption that the Office's rejection under 35 U.S.C. §103(a) was based on International Publication No. WO 03/006446. However, International Publication No. WO 03/006446 has not been made of record by the Office. Submitted herewith is applicants' Information Disclosure Statement listing International Publication No. WO 03/006446. Applicants respectfully request

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return of an initialed copy of the Information Disclosure Statement and indication on the record of consideration of International Publication No. WO 03/006446 by the Office.

It is respectfully submitted that claims 1-16 and 19-23 are patentable over International Publication No. WO 03/006446 for the reasons set forth in applicants' remarks submitted December 12, 2008, and the remarks set forth below in connection with the outstanding obviousness-type double patenting rejection of claims 1-16 and 19-23.

Rejection of Claims 1-16 and 19-23 under the Doctrine of Nonstatutory Obviousness-type Double Patenting

Applicants respectfully request reconsideration of the rejection of claims 1-16 and 19-23 under the doctrine of obviousness-type double patenting in view of the claims of U.S. Patent No. 6,936,727 to Sutton et al. (Sutton et al.).

Based on the above-referenced April 15, 2009 telephone conference with Examiner Margaret Seaman, it is the undersigned attorney's understanding that applicants' remarks previously presented in connection with the rejection of claims 1-16 and 19-23 under 35 U.S.C. §103 should be presented in response to the outstanding obviousness-type double patenting rejection of claims 1-16 and 19-23 based on the claims of U.S. Patent No. 6,936,727 B2.

Pending independent claim 1 is directed to a process for the production of an ether optionally with a diol and/or a lactone, by reaction of a corresponding organic feed material selected from mono C₁ to C₄ alkyl esters of C₄ to C₁₂ unsaturated dicarboxylic acids and/or anhydrides, di-(C₁ to C₄) alkyl esters of C₄ to C₁₂ unsaturated dicarboxylic acids and/or anhydrides,

and/or lactones of C₄ to C₁₂ unsaturated hydroxycarboxylic acids. The process of claim 1 includes, *inter alia*:

- (a) supplying a stream comprising at least a portion of an organic feed material to a pre-reactor zone comprising catalyst and contacting the feed with a hydrogen containing stream in the pre-reactor zone such that at least some of the carbon carbon double bonds are saturated, wherein the at least partial carbon double bond saturation occurs in a liquid phase in the pre-reactor zone; and
- (b) vaporising the at least partly saturated feed into the hydrogen containing stream in a vaporising zone.

Sutton et al. disclose and claim vaporizing a feed stream and supplying the vaporized feed stream to a reaction zone comprising a catalyst and under conditions to allow hydrogenation and dehydration. For example, in the process illustrated in Fig. 2, Sutton et al. disclose vaporizing a feed stream fed via line 19 in first vaporization zone 20, subjecting the vaporized stream to hydrogenation and dehydration in a first reaction zone 25 and vaporizing additional fresh feed fed via line 28 by and into the resulting intermediate reaction mixture in second vaporization zone 27.

Applicants respectfully submit that the process defined in claim 1 is patentable over the disclosure in International Publication No. WO 03/006446 and, likewise, the claims of corresponding U.S. Patent No. 6,936,727 B2 (Sutton et al.).

As noted in applicants' reply submitted August 7, 2008, and acknowledged by the Office in the Office action dated September 17, 2008, Sutton et al. do not disclose or claim vaporizing an at least partly saturated feed into a hydrogen containing stream as required in step (b) of claim 1. The feed streams subjected to vaporization in Sutton et al. are not partly saturated

streams resulting from contact with hydrogen in the presence of a catalyst as called for in claim 1 of the subject application. Nowhere does Sutton et al. disclose or claim the process of claim 1 including vaporizing an at least partly saturated feed into a hydrogen containing stream.

To expedite prosecution, claim 1 was amended to incorporate the limitation of dependent claim 17 (i.e., that the at least partial carbon double bond saturation occurs in a liquid phase in the pre-reactor zone). In the September 17, 2008 Office action, the Office contended that hydrogenation in the first reaction zone of Sutton et al. is functionally equivalent to the at least partial saturation in the pre-reactor zone required in claim 1. Even if the first reaction zone of Sutton et al. can be said to provide partial saturation as occurs in the pre-reactor zone of the claimed process, the cited reference does not disclose, suggest, or claim partial saturation in a liquid phase reaction as required in claim 1. More particularly, in the disclosure and claims of Sutton et al., at least a portion of the cycle gas and vaporized feed material from the first vaporization zone is supplied to the first reaction zone (i.e., the reaction in the first reaction zone occurs in the vapor phase). (See, for example, claim 1; col. 7, line 43; and col. 10, lines 18-20 of Sutton et al.) At page 3 of the outstanding Office action, the Office contends that the partial double bond saturation in the liquid phase is not limiting the process. Applicants respectfully submit that this contention is untenable in that the limitation is set forth in claim 1 and in part defines the process to be patented.

As previously noted by applicants, a goal of the claimed process is minimizing cycle gas requirements, which generally requires operation at relatively high temperatures that can lead

to increased by-product formation. Vaporization following liquid phase partial saturation of the feed material as required in the claimed process advantageously reduces the cycle gas requirements for vaporization, without requiring operation at relatively high temperatures that can lead to increased by-product formation. Moreover, vaporization of a partly saturated feed as required in the claimed process provides a reduction in adiabatic temperature rise across the main vapor phase reactor. In this manner, the instantly claimed process allows for an increase in cycle gas loading without an unacceptable increase in temperature across the reactor. Thus, the process of the claimed invention provides a method for addressing the often competing concerns of cycle gas requirements, by-product formation, and process efficiency. Nowhere does the cited reference disclose, suggest, or claim the solution of preparing an at least partly saturated feed in a liquid phase in a pre-reactor zone.

Based on the foregoing, applicants respectfully request withdrawal of the rejection of claims 1-16 and 19-23 under the doctrine of nonstatutory obviousness-type double patenting in view of claims 1-15 of Sutton et al.

Applicants authorize the Commissioner to charge any fees due in connection with this Response to Deposit Account No. 19-1345.

Reconsideration and allowance of all pending claims are respectfully requested.

Respectfully submitted,

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